

# RXTE

**Intro to Energy, Wavelength, and Frequency using the NASA mission Rossi X-ray Timing Explorer Learning Center.**

**Due 26-Oct-2015**

**Objective:** You will use a NASA website to start learning about how light is used in astronomy and to help you begin to understand some of the basic frequency, wavelength, and energy calculations we will use in class.

Go to the NASA site [RXTE](https://heasarc.gsfc.nasa.gov/docs/xte/learning_center/index.html)

(If link is broken cut and past this: [https://heasarc.gsfc.nasa.gov/docs/xte/learning\\_center/index.html](https://heasarc.gsfc.nasa.gov/docs/xte/learning_center/index.html)).

Start by reading the overview in the home screen and then move to the “Shedding a New Light on the Universe page.

I. Under the table of contents start with [The Electromagnetic Spectrum](#) (EMS). You are responsible for knowing the parts on the EMS.

Complete the [Electromagnetic Spectrum Activity](#) on you records page.

II. Select [The Energetic Universe](#) next.

a. what are the symbols for speed of light, frequency, wavelength, energy, and Planks constant. Be sure to include appropriate units as well.

b. After you have read through this complete the [Frequency, Wavelength, and Energy Activity](#). Complete problems in Unit analysis,

Wavelength  $\rightarrow$  Frequency, Frequency  $\rightarrow$  Energy

Note: *NASA and many scientists use electron volts (eV) for energy units; we however will use Joules (J).*

c. Without looking it up what is the conversion between eV and J if Plank’s constant is  $4.1356 \times 10^{-15}$  eV s or  $6.63 \times 10^{-34}$  J· s? (1J =?eV, show all work)

III. List and briefly describe four (4) of the types of objects RXTE looks at.